

Space News Roundup

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National Aeronautics and Space Administration

News Briefs

JSC chooses ROLM

A new telephone system at the Center is one step closer with the announcement Jan. 16 that ROLM Corp., a subsidiary of IBM, has been selected for negotiations leading to a \$14 million contract to upgrade telecommunications at JSC. The firm-fixed-price contract will cover a digital integrated voice/data distribution system, new phones or data interfaces for all Center employees and facilities, software, supporting equipment and console instrumentation, power systems and other equipment. The contract also will include installation of the system, facilities modification, testing and follow-on maintenance. The contract will include provisions for ten one-year extensions for maintenance, operations and future expansion costs. Other proposals came from AT&T Information Systems; Bell Atlantic Systems, Inc.; Central Business Systems; General Telephone Company of the Southwest; Northern Telecom, Inc.; and Southwestern Bell Telecom.

30,000 teachers apply

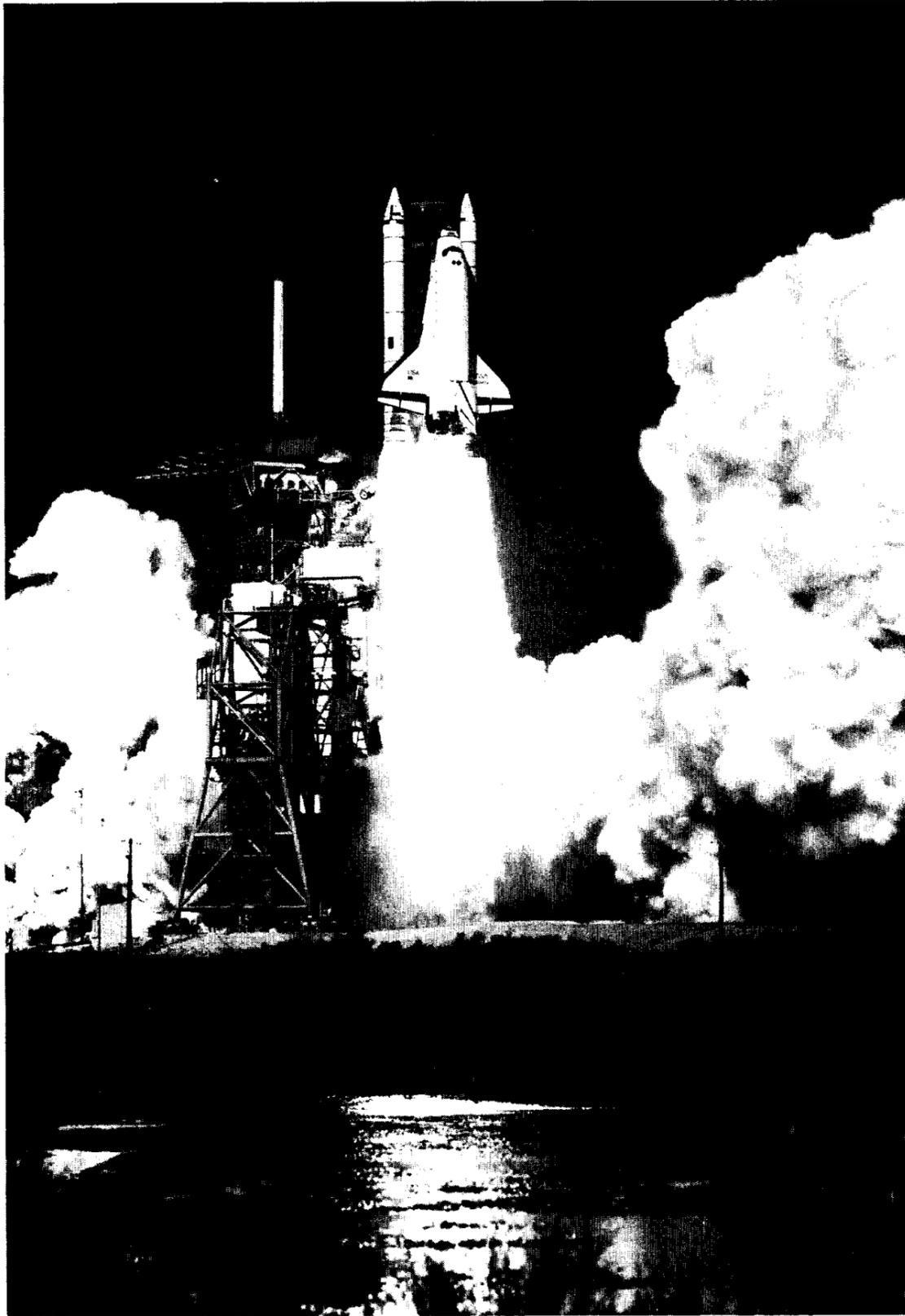
The Council of Chief State School Officers (CCSSO) reports that as of Jan. 5, some 55,000 teachers have requested copies of the Announcement of Opportunity for the Teacher in Space Project. From this group, 30,000 have requested application packets. The deadline for applications was today. The next step in the process is the selection of two nominees per state, a phase to be completed by May 1. All state nominees will attend a national education workshop in Washington from June 24 to 27. Ten semifinalists announced in July will come to JSC for medical exams and further interviews. A list of five finalists will be presented to NASA Administrator James Beggs in August. Around the first of September, the primary and backup teacher payload specialists will be announced. No specific flight has been designated, although NASA plans to fly the teacher early in 1986.

Satcom increase forecast

Demand for domestic satellite communications services will increase six-fold by the year 2000, according to study results at the Lewis Research Center. Three studies performed by Western Union Telegraph Co. and the U.S. Telephone Co. were combined into a single set of forecasts by Lewis. One prediction is that potential satellite demand will grow by a factor of 6, from 400 to 2,400 equivalent 36 MHz satellite transponders. The communications satellite industry is already a \$2 billion a year business.

GSFC realigns tracking

The Goddard Space Flight Center will transfer spacecraft tracking and data acquisition operations from its Beltsville, MD tracking station to the Wallops Flight Facility by early 1986. The move is designed to consolidate tracking operations with Wallops' existing tracking and data acquisition efforts which support balloon, sounding rocket and aeronautical flight research. The realignment is part of a Goddard effort to streamline its tracking network facilities with the advent of two active Tracking and Data Relay Satellites in space. The second TDRS satellite is to be launched on STS 51-E, scheduled for launch Feb. 20. Most of the tracking stations in Goddard's worldwide network will be either phased out or transferred to NASA's Deep Space Network or to other agencies. Goddard will continue to operate ground stations at Bermuda and Merritt Island, FL, as well as the TDRSS ground station at White Sands, NM.



Discovery lifts off Pad 39A at the Kennedy Space Center Jan. 24 on the first dedicated Department of Defense mission. An Inertial Upper Stage carried aboard performed its mission objectives, setting the stage for the deployment of TDRS-B aboard an IUS on the next flight, STS 51-E, scheduled for launch Feb. 20.

Two crews announced

NASA announced Tuesday the crews for flights in November and December of this year.

Francis R. "Dick" Scobee has been named Commander for Mission 51-L, planned for launch in November to deploy the third Tracking and Data Relay Satellite from the Orbiter *Atlantis*. The flight also is an opportunity to relaunch one of the communications satellites retrieved from orbit during Mission 51-A in November 1984. Michael J. Smith will fly the right seat as pilot, and Mission Specialists will be Dr. Judith A. Resnik, Ellison S. Onizuka and Dr. Ronald E. McNair.

Scobee flew as Pilot on flight 41-C in April 1984, the mission which repaired Solar Max. Resnik flew aboard STS 41-D in August 1984; Onizuka flew aboard the recently completed 51-C in January; and McNair flew on 41-B in February 1984.

A crew was also announced for STS 61-C, scheduled for launch in December of this year with the Orbiter *Columbia*. Michael L. Coats was named as Commander, John E. Blaha was selected to fly as Pilot, and Mission Specialists will be Dr. Anna L. Fisher, Dr. Norman E. Thagard and Robert C. Springer. Coats flew as Pilot on STS 41-D, Fisher flew as Mission Specialist on 51-A, and Thagard flew on STS-7 in June 1983. The mission will be Blaha's first flight.

Payloads on 61-C will include Western Union's Westar 7 and RCA's Satcom KU-2, the 3M Corporation's Material Sciences Laboratory 3 and the EASE/ACCESS space manufacturing experiment.

NASA also filled positions on two other Space Shuttle flights where Mission Specialists have been named earlier. Vance D. Brand will fly as Commander of STS 61-D, with David Griggs flying as Pilot. That flight will carry Spacelab 4 in January 1986. Jon A. McBride was named as Commander of 61-E, with Richard N. "Dick" Richards being named Pilot. STS 61-E will carry the Astro 1 ultraviolet astronomy package and will be involved in observations of Halley's Comet during its passage across the heavens in the early spring of next year.

SARSAT saves race driver's life

A young Belgian race driver owes his life to space age technology.

Serge Goriely, a 21-year-old driver, suffered a fractured skull when his four-wheel-drive Citroen crashed, rolled over several times and threw him out of the vehicle in a remote area of Somalia, Africa, where there were no communications or medical facilities.

A U.S. satellite — and later a Soviet satellite — picked up distress signals from an advanced, experimental radio beacon that was in the car. The signal was recorded first by the NOAA 9 weather satellite, launched Dec. 12, 1984, from Vandenberg Air Force Base, CA. Later, the Soviet satellite, COSPAS 1, also picked up the signal.

The signal picked up by the American satellite was dumped to a National Oceanic and Atmospheric Administration (NOAA)

ground station at Wallops Island, VA. The data then went to NOAA's facility in Suitland, MD., where it was analyzed and forwarded to the Air Force Mission Control Center at Scott Air Force Base, IL.

Air Force personnel notified search and rescue authorities in Toulouse, France, and they informed French diplomats in Africa. A doctor was flown to the injured race driver, who remained in a coma for five days.

He was taken to a military hospital in Djibouti, where he was treated for two days and then flown to Brussels, Belgium (his home), by the French Air Force.

Since the program began in September 1982, more than 344 lives have been saved. In the past, however, the satellites have used the 121.5/243 MHz system. With that system, the satellite can pick up a distress signal from ground or water, but must have a ground

station within range so the signal can be retransmitted to search and rescue forces.

The Goriely rescue marks the first time the advanced and still experimental 406 MHz/NOAA 9 has accounted for saving a life.

With the 406 MHz system, which can transmit more detailed information than the other system, the distress signal is recorded by the satellite, stored onboard and dumped when it is over a station. The newer system allows worldwide coverage compared to regional coverage with the 121.5/243 system.

There are no ground receiving stations for distress signals in Africa, thus the signal was not transmitted from the satellite until its orbit took it over the next ground station which was Wallops Island.

Goriely's car, in which he was accompanied by co-driver Philippe Raymakers, 24, of Antwerp, Bel-

gium, crashed near Galcaio, Somalia, about 2:13 p.m. EST on New Year's Eve. Raymakers activated the distress beacon, furnished by Electronique Aerospaciale of Paris, at 3 p.m. and the signal was picked up by NOAA 9 two minutes later. The signal was transmitted to the ground station and analyzed. The French in Toulouse were notified of the distress signal at 4:19 p.m. — just one hour and 19 minutes after the beacon had been activated. An hour later, the Toulouse station picked up a similar signal from the Soviet satellite.

Goriely, who remained in the Brussels hospital for a week, is now recovering at home and hopes to rejoin the race somewhere along the 35,000-mile course from Cape Town, South Africa, at the southernmost tip of Africa to Tierra Del Fuego, Argentina, the southernmost point in South America.

Bulletin Board

Griffin to address NCMA

JSC Director Gerald D. Griffin will be the banquet speaker kicking off the 17th Annual Educational Conference of the National Contract Management Association Feb. 13 at the Hobby Airport Hilton Hotel. This annual conference on procurement issues will engage members and interested guests in a full days' session Feb. 14. Featured speakers on the program include NASA Inspector General June Gibbs Brown; Defense Contract Audit Agency Deputy Director Fred Newton; noted contracts attorney Richard Sauber; NASA's policy member to the Defense Acquisition Regulatory Council, Mike Sullivan; Rockwell International Corporate Senior Contracts Executive George Guthrie; and the Principal Associate Administrator, Office of Federal Procurement Policy, Bill Mathis. Interested civil service employees may call Ruth Elder at x2241 for registration information. Interested contractors may call Ralph Schimmel at 333-7236.

Fitness Program begins new cycle

Now nearly two years old, the JSC Physical Fitness Program has taken nearly 400 JSC employees and given them an education in exercise and fitness. Operating in 12-week cycles, the Fitness Program is now taking applications for the next cycle, which runs from April 8 to June 28, according to JSC Fitness Director Larry Wier. Statistics over the course of the program show that participants have averaged a 10 to 12 percent decrease in body fat, a 28 percent increase in abdominal strength and a 10 percent increase in endurance, all in 12 weeks. The idea behind the program, Wier said, is to begin an exercise program through a 12-week educational phase. Participants learn the value of exercise, and also learn how to do it safely. After that, class members keep in touch through a newsletter, and come back every three months for fitness tests. The exercise programs are tailored to each individual, based on their medical history and the fitness level they have coming into the program. The program is open to all JSC employees, contractors, retirees and their dependents. Applications are available at the JSC Clinic and at the Gilruth Recreation Center office. The deadline for applications for the next 12-week cycle is Feb. 25. For more information, call Wier at x3531.

History is where you find it

The JSC History Office reminds employees that those old files and documents cluttering up your office could have historical significance. Research into past manned spaceflight programs often benefits from even the most seemingly mundane documents. Before discarding old paperwork, give the History Office a call at x2838 and see if they are interested.

JSC Credit Union has board openings

Applications are now being accepted for three Board of Director positions at the JSC Federal Credit Union. Each position is for a three year term. Applications are due at 4:30 p.m. Feb. 5 and must include a brief description of the candidates' qualifications and statement of willingness to serve. The election will be held March 7 from 10 a.m. to 5 p.m. in the Credit Union lobby. Results of the election will be announced later that day at the Credit Union's annual meeting to begin at 7:30 p.m. Applications should be forwarded to Curtis Collins, AH7; Stuart Lenett, PC; or Betsy Long, Omniplan.

BAPCO meeting scheduled

The next meeting of the Bay Area PC Organization, BAPCO, will be held beginning at 7:30 p.m. Feb. 19 at the Sheraton Kings Inn on NASA Road 1. BAPCO meets regularly on the third Tuesday of each month. For more information, call Earl Rubenstein, x3501, or Hattie Thurlow, x2213.

Robotics workshop set by ISA

The Instrument Society of America is scheduling the first annual workshop on robotics and expert systems to be held June 27 and 28 at the Gilruth Recreation Center. The workshop will include tutorials and technical paper sessions on such topics as expert systems, industrial robotics, computer algebra, artificial intelligence for man-machine communications, teleoperations and space robotics, sensors and vision, distributed AI and automated programming. The deadline for abstracts has been extended to Feb. 8, 1985. The pre-registration deadline is June 7. For more information, call Manoch Mahmoudi, x2643.

Space geologists to speak

Dr. John W. Dietrich, Research Geologist of the Solar System Exploration Division, and Dr. Ted H. Foss, former Chief of the Geology and Geophysics Branch at JSC, will speak at the 10th Annual Show of the Clear Lake Gem and Mineral Society to be held Feb. 16 and 17 at the Pasadena Convention Center. Dietrich will discuss the geology of the Trans-Pecos region of West Texas during his talk at 2 p.m. Feb. 16. Foss will discuss recent explorations for gold and minerals in California and Alaska during his talk at 2:30 p.m. Feb. 17. In addition to speakers, the show features exhibits, dealers, demonstrations, lectures and films. The times are 9 a.m. to 8 p.m. Feb. 16 and 10 a.m. to 5 p.m. Feb. 17. The convention center is located at 7902 Fairmont Parkway in Pasadena.

Colors are retired



The flight colors of six former flight directors were formally retired in a party Jan. 11 in a festive resumption of a longstanding Mission Operations tradition. The photos at left were taken as each of the six honorees were presented with proclamations by former JSC Director Dr. Christopher C. Kraft, Jr. From top to bottom, the honorees and their control team colors were: Charles R. Lewis, Bronze Flight; Donald E. Puddy, Crimson Flight; Harold M. Draughon, Crystal Flight; Milton W. Windler, Maroon Flight; Philip C. Shaffer, Purple Flight; and Neil B. Hutchinson, Silver Flight. On hand for the ceremonies were most of the former flight directors whose colors have already been retired: Glynn S. Lunney, Black Flight; Clifford E. Charlesworth, Green Flight; Gerald D. Griffin, Gold Flight; M. Pete Frank, Orange Flight; Christopher C. Kraft, Red Flight; and Eugene Kranz, White Flight. John B. Hodge, whose team color was Blue, was unable to attend. Above, JSC Director Gerald Griffin enjoys the buffet meal which was served. Below, Kraft spoke to the audience about the past, present and future role of flight control. At bottom, former flight directors Kraft, Griffin, Lunney and Frank applaud the honorees.

NASA
Lyndon B. Johnson Space Center

Space News Roundup



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A Florida freeze

A Lockheed launch pad monitor checks a communications box that was frozen over during sub-freezing weather in Florida the day before the scheduled STS 51-C launch. Cold weather delayed the liftoff one day.

Aviation reporting system improves air safety

NASA's anonymous and voluntary Aviation Safety Reporting System (ASRS) in eight years has evaluated some 42,000 incident reports, and issued 805 alert bulletins and 28 research reports to further improve safety in the airways.

"We believe that ASRS reports have eliminated serious hazards and saved lives," stated William Reynard, program manager at NASA's Ames Research Center, Mountain View, Calif. ASRS was designed and implemented by NASA in 1976 at the request of the Federal Aviation Administration (FAA). NASA was to serve as "a neutral third party" in operating the system.

"Put simply, ASRS gives pilots and flight controllers a way to report incidents we'd never have known about otherwise," Reynard said. ASRS reports have led to revisions in both air traffic control procedures and FAA regulations.

"For instance," said Reynard, "we were able to identify the need for more help from flight controllers to general aviation pilots operating at night over unfamiliar terrain in providing warnings of such terrain hazards as mountain peaks.

"In another example, cockpit conversations and activity in transport aircraft flying below 10,000 feet now are restricted to flying the plane. ASRS reports clearly showed that random conversations and other non-essential activity during times of heavy workload are dangerously distracting."

System reports also have produced a number of changes in pilot flight training for airline, military and general aviation pilots based on the additional real flight data.

A principal feature of the ASRS is that it is confidential and voluntary. When a hazardous incident occurs, participants can "tell it to the ASRS" without personal embarrassment or fear of incrimination. Reports and data in the system do not include names or revealing details. The reports, nonetheless, do give specific examples of real situations to avoid.

NASA acts as a knowledgeable but neutral third party. This protects the confidentiality of pilots, air traffic controllers, and others desiring to share safety information. To encourage reporting, FAA grants to report-makers limited immunity from disciplinary action except in cases involving accidents or criminal conduct.

The system has become a model for other countries and industries. England has begun such a program and Canada is developing one. Other countries have used ASRS data to design and organize safety systems. The ASRS concept of voluntary, confidential incident reporting is under study by the U.S. Nuclear Regulatory Commission, the Department of Transportation, and other government and industry groups.

The 40,000-item ASRS data base has become a major resource for various human factors research. Its unique quantity and detail of material can be used to formulate behavior models and provides insights into many human situations.

Reynard cites studies which say that, for every accident, an average of 600 unsafe incidents take place. But Reynard points out that ASRS and other air safety efforts aim at improvements in an already reliable system. Air travel is three times as safe as travel by auto.

The ASRS gets about 500 incident reports per month. These are screened and analyzed by a staff of experienced pilots and air traffic controllers. Data are used to identify current safety problems and forecast future problems and trends as the air traffic system grows and changes with new technology.

Data also are used by NASA to carry out safety research for the FAA; National Transportation Safety Board; Defense Department; and other government, industry and safety organizations.

ASRS also produces a monthly safety bulletin, CALLBACK, available to anyone interested in air safety. When safety hazards needing rapid response appear, alert bulletins go to FAA, industry and other involved organizations.

A space station shopping list

A sense of some of the technological concepts being pursued for the Space Station Program can be gleaned from the following list of more than 30 procurement actions due in the next three months. The shopping list will be released to the aerospace industry in the form of requests for proposals (RFPs) by the Marshall Space Flight Center. This is in conjunction with Marshall's responsibility for development of the Space Station Common Module.

The planned procurement actions include:

- **Space Station Common Module Video System** — Define and develop techniques and equipment designs for the general purpose distribution and processing of video signals within the common module. This will include investigation and development of state-of-the-art techniques for routing, processing and transmission of video data. Candidates' techniques will be implemented and evaluated.
- **Space Station Common Module Audio System** — Analyze requirements for a common module audio system, evaluate candidate system concepts, define the criteria for selection of a concept for hardware implementation and provide a proof-to-concept minimum set of flight-type hardware using readily available laboratory equipment. The system will include wireless voice intercommunication subsystems as well as audio channelization, switching and routing subsystems.
- **Electro-Optical Sensor Assembly** — Development of an advanced star tracker to achieve the accuracy and reliability required by Space Station. The Charge Injection Device technology used as the sensor/detector element is to be supplemented with the design and development of subsystem components including the packaging, optics and associated electronics.
- **Advanced Planar Array Development** — Design, fabrication and test of advanced solar array panels (200-500w) utilizing back-grid contact silicon cells and superstate technology. This activity will also produce a 15-20kw solar array wing.
- **Power System Breadboard** — Development of a modular 5kw AC high voltage, high frequency power processing system. The system shall have the capability of accepting high voltage, DC inputs and deliver high voltage, high frequency AC to various AC, DC and bidirectional user modules. The system will be flexible to permit evaluation of a variety of equipment options.
- **Common Module Electrical Power System (EPS) Automation Development** — Determine degree of automation most appropriate for common module EPS, including the role of expert systems. Develop the rule base for an expert system and determine appropriate automated power management hardware and software automation, module load management, local energy storage, sensing requirements, etc.
- **Electrical Power System (EPS) Hardware Development** — Design, development, fabrication and qualification of a series of power system components including capacitors and diodes. Develop qualification and screening plans and perform quality performance testing in accordance with required specifications. Deliver 100 of each piece of equipment.
- **Molecular Sieve Development** — Determine the feasibility of using molecular sieve sorbent material for removing carbon dioxide from the Space Station atmosphere. The selected sorbent material will then be subjected to various laboratory scale tests to determine carbon dioxide removal characteristics and to verify that it is hydrophobic. Additional tests will be conducted to verify that the sorbent material is regenerable via desorption and to determine the desorption process necessary to regenerate the sorbent material for continued carbon dioxide removal. Based on accumulated test data, a preliminary Space Station molecular sieve carbon dioxide removal system will be developed.
- **Advanced Orbital Servicing Technology** — Analytical evaluation, definition of requirements, development of prototype tools procedures and approaches for servicing freeflyers, payloads and modules such as solar array, propulsion and environmental control and life support system hardware. These tools and procedures will be evaluated in a 1-g and simulated 0-g environment to validate techniques and maintenance/servicing hardware.
- **Orbital Equipment Transfer Techniques** — Design, development and test of tools and techniques for transferring materials/hardware to, from, into and out of the Space Station. The activity will develop a technology base for material/hardware transfer techniques and tools.
- **Propulsion Technology Development** — Trade analysis, definition design, development and test of components required for a gaseous oxygen/hydrogen propulsion system and a warm hydrogen propulsion system which will be evaluated in the advanced propulsion technology development activity. The contract also covers the delivery of test bed components necessary to have an operational test facility.
- **Long Term Lubrication in Space** — Provide data from an in-depth tribological survey which will be utilized to assess the probability of each wear area of achieving its design life goal. Deliverables include: a plan of activities to accomplish the proposed scope of work, preliminary and final tribology surveys of survey findings including a forecast of probable problem areas, documented recommendations for improvement in problem areas, documented areas of probable/required orbital hardware replacement, recommendations for simulation or full-scale tests and a Phase II final report.
- **Protective Coatings for Solar Array Materials** — Space Station external surfaces of many types of materials will be required to perform over the lifetime of the Space Station and to resist degradation from the space indigenous environment of electrons, protons, UV irradiation, thermal vacuum, micrometeoroids, atomic oxygen and man-induced space debris. This contractual effort is aimed at establishing and ensuring technology readiness in materials for the Space Station. Deliverables include: (a) a materials usage specification in the area of atomic oxygen effects on materials and (b) development of a materials data base for Space Station application.
- **Development of an Atomic Oxygen Simulation System** — The effect on exposed materials of the ambient atomic oxygen atmosphere at low earth orbit is one of the main concerns for long-term missions. The purpose of this effort is to design, build and install at the Marshall Center an Orbital Atomic Oxygen Simulation Test System. This system shall consist of the atomic oxygen source, a clean high vacuum exposure chamber, diagnostic instrumentation to characterize the atomic oxygen beam and other test parameters, and required material properties measuring instrumentation.
- **Contamination Control** — This contractual effort is aimed at establishing and ensuring technology readiness in the area of contamination control. Deliverables include: an empirical model for glow phenomena; Space Station contamination control requirements, specifications and contamination control plan; and test methods for identifying materials which meet Space Station contamination control criteria.
- **Wall Design and Penetration Damage Tests** — In the definition of Space Station structural design, data is needed on the impact and penetration of structure due to micrometeoroids and orbital debris. This contract is to obtain instrumentation (such as high-speed cameras, pressure and temperature transducers, etc.) to define the effects of penetration in the habitable environment and to permit damage assessment studies of structural integrity of representative Space Station structures.
- **Integral Wall Design and Penetration Damage** — Definition and development of an integrated module wall design and a penetration control plan. Emphasis will be placed on cost-effective design approaches and fabrication techniques rather than designing for minimum weight. Use of advanced materials will be investigated. Effects of penetration will be determined and an effective method of minimizing the penetration hazard developed.
- **Rotating Joint Mechanism** — Design, develop and demonstrate the required capabilities of a rotary electromechanical control system through extensive subsystem and system-level test of the actuator, electrical power transfer mechanism, fluid power transfer mechanism, control electronics and the required closed-loop control system capabilities to support the initial operation capabilities of the Space Station Phase C/D start. These rotary actuator systems or rotary joints will be utilized in pointing the normal vector or large solar arrays to the sun and positioning large thermal radiators in order to minimize energy transfer.
- **Berthing Mechanisms** — Design and develop candidate berthing mechanisms and methods that will achieve mating of primary module to module and Space Station to orbiter with a minimum load and position disturbance. The intent of this design effort is to maximize the capture envelope/capability of this mechanism such as to minimize relative positional accuracy requirements.
- **Intelligent Robotic Systems** — Study techniques for evolving from teleoperations toward intelligent and near-autonomous robotic systems. The primary emphasis will be to demonstrate techniques to determine location and movement within the workplace.

Roundup Swap Shop

All Swap Shop ads must be submitted on a JSC Form 1452. The forms may be obtained from the Forms Office. Deadline for submitting ads is 5 p.m. the first Wednesday after the date of publication. Send ads to Roundup, AP3, or deliver them to the Newsroom, Bldg. 2 Annex, Room 147. No phone in ads will be taken.

Property & Rentals

For lease: Newport subdivision, 3-2-2, fenced yard. Call 998-7224.

For sale: Dickinson 4-2-2.5, custom-built brick, formals, FPL, wooded lot, landscaped, approx. 2200 sq. ft., \$85,000. Call Johnson, 488-2000.

For sale: Friendswood, 3-2, 2000 sq. ft., 1.27 acres on Coward's Creek, large trees, \$88,000 firm. Call Bill, x2631 or 482-1348.

For sale/lease: Pasadena 4-3, good assumption, \$51,000. Call Damewood, 482-5572.

For sale/lease: 10 acres, close in, fenced. Call Damewood, 482-5572.

For sale: Friendswood/Forest Bend, 4-2.5-2, pool, 6 ceiling fans, formals, gameroom w/wet bar, lots of trees, military move, \$82,500. Call 482-4145.

For rent: Galveston/Tiki Island, new 3 BR home on canal, dock your boat, fish, swim, TV, master bath spa, weekly or monthly rates. Call 486-9335.

For lease: Heritage Park, 3-2-2, new carpet, floor & paint, ceiling fans, fence, \$495/mo. Call 482-6609.

For sale: University Green patio home, 2-2-2, FPL, cathedral ceiling, microwave, fenced, detached garage, many extras, \$83,900. Call 488-0500 or 480-6516.

For sale/lease: Oakbrook, 3-2-2, quiet cul-de-sac, large fenced yard, storage building, \$550/mo or 80K. Call Andy, x5879 or 488-5344.

For rent: Galveston condo, 2 BR, great view of Gulf, 2 day min., (also for sale). Call Clements Jr., 474-2622.

For sale: Waco area, 100 acres, old home, buildings, tractor, fruit, pecan, oak trees, bass ponds, road frontage, \$825/ac. Call Don, 488-8105 after 5 p.m.

For sale: Free-standing office near new Kemah bridge, 1,200 sq. ft., \$60,000 OBO. Call Horton, 332-1309 after 5 p.m.

For sale/lease: Bayview/Kemah, beautiful brick 3-2-2, new carpet, central air/heat, Clear Creek schools, apply 100% of rent to purchase, \$425. Call 486-0462.

For sale: Pearland, TX, 1.036 acres w/running water, \$12,000 OBO. Call 930-1509.

For sale: Large 4-2-2 Nassau Bay townhouse, contemp., 2,200 sq. ft., master down, new carpet & paint, sundeck, 20 ft. FPL, atrium, large garage, reduced to \$114,900. Call Jerry, x3561.

For sale: Middlebrook II 4-2-2A, Playa contemporary, excellent condition, lovely master bath, 1,864 sq. ft., \$92,900. Call Ron, x3821 or 488-7387.

Cars & Trucks

1982 Camero sport coupe, charcoal metallic color, matching interior, PB, PS, AM/FM, V6, std., 33,000 miles, \$7,700. Call 554-4263 after 5 p.m.

1980 Toyota Tercel, automatic, AC, AM/FM, 3-dr. hatchback, good condition, \$3,750/OBO. Call Brady, 488-4934.

1981 Chevy Silverado P.U., 46,000 miles, excellent cond., new tires, \$5,500. Call 480-3176 after 6 p.m.

1979 Mustang, 4 spd., TRX suspension, 5.0L, PS, PB, AC, AM/FM cassette, \$2,900. Call 996-0356, evenings.

1979 VW Rabbit, 53K, 4 spd., no AC, \$1,800. Call Ken, x5495 or 480-6266.

1983 Renault Alliance, 2dr., AC, AM/FM cassette, white w/gray interior, excellent cond. Call 280-3483 day or 332-1016 night.

1979 Chrysler LeBaron, V-8, loaded, excellent cond., reasonable. Call 482-3843 after 5:15 p.m.

1977 Allegro 23' motor home, loaded, clean, dash & roof air, generator "Onan", 52,070 miles, sleeps 8 or more, 350 Chev. engine, \$11,000. Call Margaret, x4414.

1979 Datsun 310, dependable, 30 mpg, AM/FM cassette, AC, runs great, consider all offers. Call 481-1158 evenings.

1972 VW Super Beetle, AC, new engine, \$1,200. Call 538-4135 after 5 p.m.

1983 Mitsubishi Cordia, 4spd., \$7,000. Call 334-1415.

1981 Datsun 310-GX, 35,000 miles, 32 mpg, AC, AM/FM cassette, good condition, \$4,000. Call Marie, x3905 or 338-2336.

1981 Pontiac Phoenix, hatchback, V6, AC/PS/PB, AM/FM tape, roof rack, runs well, \$3,000/OBO. Call Leo, x4045 or 554-6460 evenings.

1980 Chevette, 2 dr., 4 spd., AC, AM/FM cassette, clean, runs well, \$1,950. Call Bob, x6327 or 333-4269.

1971 Super Beetle, AM/FM cassette, radials, needs carb. work, \$450. Call Don, x4027 or 332-2331 after 6 p.m.

1984 Corvette, red/red leather, 4 spd. auto., excellent cond., 19,500 miles, \$22,000/OBO. Call BeeJay, x4366 or 486-8156 evenings.

Boats & Planes

Piper Lance aircraft, 6-place, club seating, \$85/hr. wet. Call Damewood, 482-5572.

1978 Cessna 152, 1350 total time, Cessna 720 Nav-Comm, no damage, NASA Aero Club trainer. Call Bohannon, x4161.

Dolphin Sr. sailboat and trailer, \$550. Call 538-2083.

Sculling (rowboat) shell, double w/conversion to single, four blades, like new, \$1,800. Call Gene Horton, 332-1309 after 5 p.m.

1971 Sea King, 55 HP, tilt trailer, good shape, runs well, spare rebuilt bottom end, \$1,375. Call 996-0401.

1984 Monark aluminum bass boat, 16 ft., 50 HP Merc, Merc Thruster trollmotor, two Livewells, bilgepump, Eagle depth finder, \$4,500. Call Mike, 476-1618.

Cycles

1972 Honda 750cc, 13K, like new, garaged all its life, \$1,200. Call Cleary, 337-6263.

20" Super Mongoose bicycle, all

chrome, like new, cost \$320, asking \$195. Call McNeely, x6347 or 482-5837.

Audiovisual & Computers

Heathkit 25" console T.V., needs some work, \$75; stereo cabinet, excellent cond., \$50. Call 474-4065.

Household

Matching sofa, loveseat, ottoman, excellent cond., \$500. Call Kathy, 488-2405 evenings.

Double bed, cherry wood head, foot & side boards, firm mattress & box spring, excellent condition, \$150. Call 488-6521.

Ethan Allen trundle bed, antique yellow, perfect condition, \$175. Call 280-3482 day or 332-1016 night.

New mattress, box springs, frame for double bed, \$100; Queen size headboard, heavy dark wood w/rounded posts, \$35. Call Janet x5111 or 486-4506.

Maytag dishwasher, harvest gold, excellent cond., \$200; full mattress, box springs & metal frame, \$75; FPL screen, black/antique brass, \$30. Call 480-6185.

Sofa/Queen-sized pull-out bed, brown, excellent cond., \$125. Call Doug, x4027 or 480-0002 after 6 p.m.

1930 converted player piano, in good condition, plays well, good for beginner, \$350. Call 480-4359 after 5 p.m.

Pets

Pomeranian puppies for sale, AKC registered. Adorable. Call Annita, x6493 or 482-1461 after 5 p.m.

Free puppies: tan w/black muzzles and markings, sire is Australian shepard, bitch is black lab/shepherd, pups weaned and ready to go. Call Brian, x5111, or Randy, 480-5194.

Musical Instruments

Wurlitzer organ, cord-organ capabilities, internal and external speakers for special effects, excellent cond., \$950. Call Joel, 486-6869.

Wanted

Well-rounded basketball player needs a team, anxious to exercise. Call Tom, 333-1400 or 334-4894.

Housemate wanted, share 3 BR house in Sagement area, \$300 + half utilities. Call John, x5554 or 484-6177.

Riders wanted for vanpool, from Meyerland Plaza to NASA area, arrive at 8 a.m., leave 4:30 p.m. Call Richard Heeterks, x3583 for more information.

Responsible male to share 3 BR house in Pasadena, close to NASA, \$200/mo + one-half utilities. Call 930-1509.

Want to buy VIC-20 computer. Call Jim, x4971 or 482-1461 evenings.

Miscellaneous

Wedding dress, size 10, worn once, great condition, \$200. Call Michelle, x5094.

BBQ pit, on wheels, firebox, grill, 10 brisket cooking area, extra large smoker/warmer, \$1,800. Call Whitmore, x7241.

"Open Road" BMX bicycle, mag wheels, knobby tires, ape hanger handle bars, \$50. Call Whitmore, x7241.

16', 4 ton flatbed trailer w/drive-on ramps, electric brakes, new treated lumber deck w/stainless bolts, \$1,000/OBO. Call 332-3644 after 7 p.m.

Rent a mini motor home, self-contained including onboard power plant, roof air, the comforts of home on wheels. Call Dave, x5111 or 480-0202 after 5 p.m.

World War II .31-caliber Japanese rifle with bayonette. Call Dave, x5111 or 480-0202.

Solid mahogany panel door, hand

carved, unfinished, still in shipping carton, cost \$600, asking \$100; high quality carpet remnant, wool blend, beige, 10' x 13', \$60. Call McNeely, x6347 or 482-5837.

Smith-Corona Coronet 12 electronic typewriter, cartridge type, like new, locking case included, \$75. Call Doc Pepper, x3581.

Stamp collection, approx. 21,000 pre-1964 and world stamps, mounted in 3 binders, \$800. Call Doc Pepper, x3581.

Portable dog kennel, medium size, 19 in. high, used only once, \$30. Call Paul, 480-9544 after 5 p.m.

Butcher block dining table with four director's chairs, excellent condition, \$135. Call Becky, x6158 or x3210.

Gilruth Center News

Call x3594 for more information

Typing — Learn to type 15 to 70 words per minute by the Touch 6 method in this six week course covering business letter formats, horizontal & vertical centering, speed building timings, numbers and more. Class begins March 4 and runs from 5:30 to 8 p.m., Mondays. \$85 per person.

Silk flowers class — Learn the basic principles and techniques of floral arranging. This course requires you bring scissors, wire cutters and a large Boston fern. This six week course begins Feb. 5 and runs from 7 to 8:30 p.m. \$35 per person.

Karate — This four week class runs from 6:30 to 8 p.m. beginning March 5 and costs \$30 per person.

Word processing — Work with IBM, Apples and any other machine we can get access to in this course covering legal letters, resumes, and other documents, all using Wordstar. This six week course begins March 27 and runs from 5:30 to 8 p.m. \$165 per person.

Banjo — A beginning class for people with no musical experience, this course will focus on learning simple songs, chord strums, picking and melodies. This six week class begins Feb. 6 and runs from 8 to 9 p.m., Wednesdays. \$25 per person.

Guitar — This class will focus on learning simple melodies. Learn how to pick out simple songs. This six week course begins Feb. 6 from 7 to 8 p.m. \$25 per person.

Ballroom dancing — This class will teach the basics of such steps as the rhumba, foxtrot, the cha cha and the waltz. Beginners start on March 7 from 8:15 to 9:30 p.m. Intermediates will begin on March 7 from 7 to 8:15 p.m. No individual registration. \$60 per couple.

Country-western dance — This course starts March 4. Advanced will dance from 7:45 to 8:45 p.m. Beginners from 8:45 to 10:15 p.m. Enrollment limited. First come, first serve basis. \$20 per couple.

Dancercise — "Don't have a physical phft." Trim up and tone down in a way that is both fun and pretty. This six week course begins on Feb. 12 from 5:15 to 6:15 p.m., Tuesdays and Thursdays. Limited enrollment, \$25 per person.

Defensive driving — Learn to drive safely and qualify for a 10% reduction in your insurance for the next three years. Class begins March 23 from 8 a.m. to 5 p.m. \$20 per person.

Ladies weight training — This four-week class begins Feb. 11, meeting Mondays and Wednesdays from 7 to 8 p.m. Limited enrollment, \$20 per person.

Yoga — Through the use of classic yoga exercise you will gain inner peace, awareness and control of your body. Class begins March 5 and runs from 5:30 to 6:30 p.m. Tuesdays. \$25 per person.

Lost and Found

Lost — Silver colored lapel pin, in shape of a dove, minimal monetary value, great deal of sentimental value, lost in vicinity of Bldg. 1 or Rec Center. Call Jan, x3628.

Found — A ring in the parking lot next to Bldg. 17. Owner can claim by describing. Call Don, x5293.

Cookin' in the Cafeteria

Week of February 4 — 8, 1985

Week of October 25 - 29, 1984

Monday: French Onion Soup; Beef Chop Suey, Polish Sausage w/German Potato Salad, Breaded Veal Cutlet (Special); Okra & Tomatoes, Green Peas. Standard Daily Items: Roast Beef, Baked Ham, Fried Chicken, Fried Fish, Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

Tuesday: Split Pea Soup; Salisbury Steak, Shrimp Creole, Fried Chicken (Special); Mixed Vegetables, Beets, Whipped Potatoes.

Wednesday: Seafood Gumbo; Fried Catfish w/Hush Puppies, Braised Beef Rib, BBQ Plate, Wieners & Beans, Shrimp Salad, Stuffed Bell Pepper (Special); Corn O'Brian, Rice, Italian Green Beans.

Thursday: Chicken Noodle Soup; Beef Stroganoff, Turkey & Dressing, BBQ Smoked Link (Special); Lima Beans, Buttered Squash, Spanish Rice.

Friday: Seafood Gumbo; Broiled Turbot, Liver & Onions, Fried Shrimp, Meat Sauce & Spaghetti (Special) Green Beans, Buttered Broccoli, Whipped Potatoes.

Monday: Beef & Barley Soup; Beef Chop Suey, Breaded Veal Cutlet w/Cream Gravy, Grilled Ham Steak, Wieners w/Baked Beans (Special); Buttered Rice, Brussels Sprouts, Whipped Potatoes. Standard Daily Items: Roast Beef, Baked Ham, Fried Chicken, Fried Fish, Chopped Sirloin. Selection of Salads, Sandwiches and Pies.

Tuesday: Celery Soup; Fried Shrimp, Pork Chop w/Applesauce, Turkey a la King, Chinese Pepper Steak (Special); Au Gratin Potatoes, Breaded Squash, Buttered Spinach.

Wednesday: Seafood Gumbo; Fried Catfish w/Hush Puppies, Braised Beef Ribs, Mexican Dinner (Special); Spanish Rice, Ranch Beans, Buttered Peas.

Thursday: Green Split Pea Soup; Corned Beef w/Cabbage & New Potatoes, Chicken & Dumplings, Tamales w/Chili, Hamburger Steak w/Onion Gravy (Special); Navy Beans, Buttered Cabbage, Green Beans.

Friday: Seafood Gumbo; Deviled Crabs, Broiled Halibut, Liver & Onions, BBQ Link (Special); Buttered Corn, Green Beans, New Potatoes.

The Form debuts

Beginning with the Feb. 15th issue of the *Space News Roundup*, all ads submitted to the Roundup Swap Shop must make use of a JSC Form 1452, a copy of which is reprinted here. The form is being introduced in an effort to make Swap Shop advertising somewhat easier, not only for advertisers, but for the staff of the Media Services Branch, Public Affairs Office, as well. The branch receives anywhere from 50 to 100 calls a week from people asking for instructions on how to place a Swap Shop ad, even though the procedures have been the same for nearly 20 years. The excessive telephone traffic and the apparent confusion may best be remedied, we hope, by one form which lists all procedures for placing ads, and which also gives instructions on how to estimate deadlines for submissions. You must use this form to submit an ad, otherwise it will not appear in the paper.

The form is available from the Forms Office, Distribution Operations, at Mail Code JM86. You don't need to call the folks in Forms. In fact, please do not call the folks in Forms. Instead, ask your secretary to order this form by filling out a standard requisition on a JSC 614, and sending it to Forms at Mail Code JM86. In a matter of days your branch will be provided with the Swap Shop submission forms. That's all it takes, and we greatly appreciate your cooperation.



Roundup Swap Shop Submission

Important: All advertisements accepted for free publication in the Space News Roundup **MUST** meet the rules and procedures as follows:

1. Keep the ad brief and to the point, around 25 words or less (Length is not as important as clarity).
2. Two separate ads, maximum, per person, per issue are allowed. You may place several items within one ad, just keep the descriptions short. If you send more than two ads, only the top two will be printed. **The remainder will be discarded.**
3. Ads are not automatically repeated. If you want an ad to run in three successive issues, you must send it in and meet the deadlines for three successive issues. Do not send three copies of one ad and expect them to be carried over.
4. No phone-in ads are accepted.
5. No commercial ads are accepted.
6. Ads are accepted from NASA civil service employees, retired civil service employees and from on-site contractors. All on-site employees must use **JSC Form 1452** to submit ads. Retirees may submit ads by mail as before, using 8 1/2 x 11 paper.
7. Send ads to Roundup Swap Shop, Code AP3, or deliver them to the Bldg. 2 annex, Room 147.
8. All advertisements must include full name, work phone, mail code and home phone number. Specify which phone number you want in the advertisement.
9. Roundup deadline is always close of business the first Wednesday following the date of publication (not the day you receive the paper).

Submitted By: (Name, print or type)		Signature	
Office Phone Number	Home Phone Number	Employer	Mail Code

Ad #1 (Include only personal information you wish to have published.)

Ad #2 (Include only personal information you wish to have published.)

